Anchor QEA, LLC (Anchor QEA) submitted the *Draft Chemical Fate and Transport Modeling Study* to the U.S. Environmental Protection Agency (USEPA) on February 1, 2012. Anchor QEA received comments from USEPA and other agencies on May 10, 2012 (Table 1). Additional comments from the U.S. Geological Survey were received on June 6, 2012 in an email from USEPA (Table 2). The comments were addressed in the *Draft Final Chemical Fate and Transport Modeling Study*, which was submitted on July 18, 2012, as described in Tables J-1 and J-2.

Table J-1
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EPA Comment Number	Report Section/ Page	EPA Comment	Response/Approach for Addressing in Draft Final Report
1	Section 1.3, p. 3	This section states the main goal of the work discussed in this report is to simulate physical and chemical processes that are controlling chemical fate and transport of key Site-related contaminants within the aquatic environment of the Site. It could not be determined whether major rain events such as the June 2001 Tropical Storm Allison nor the 2008 Hurricane Ike were included as factors. The October 1994 rain storm that resulted in the Pipeline explosion was documented as a notable storm event. Data regarding such events shall be added and discussed in the report to determine the river depth and possible impacts.	The hydrodynamic and sediment transport models were used to simulate the 21-year period from 1990 through 2010 (see Section 4.3). This multi-year simulation included the effects of the three storms mentioned in the comment.
2	Section 1.3, p. 3, footnote	"Although there are data gaps pertaining to the fate and transport from subsurface soils associated with the impoundment south of I-10 to the aquatic environment, those data gaps do not affect or limit this analysis". The report shall provide data or evidence to clarify and justify this statement.	The footnote was expanded to clarify the statement.
3	Section 2.2.1, p. 8	The report shall provide a reference for the following: "The hydrodynamic model that was applied in this study is the Environmental Fluid Dynamics Code (EFDC), which is supported by USEPA."	The EFDC reference (Hamrick 1992) is provided in the paragraph that is referenced in the comment. The text was modified to clarify the citation.
4	Section 2.2.2, p. 9	The report shall justify not simulating organic solids in the model framework. In addition, clarification of footnote 3 is needed because marine traffic (other than the San Jacinto River Fleet) including dredges and barges have had operations in this area prior to 2011.	Text was added to Section 2.2.2 to justify excluding the simulation of organic solids transport in the model. Footnote 3 was clarified to indicate that dredges and barges have operated in the Study Area prior to 2011.

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5	Section 2.3, p. 11	"This approach is valid and has been used at numerous other sites (e.g., Upper Hudson River, Lower Willamette River)." The report shall provide citations so the reader can confirm that the approach used in these other studies is applicable to this study.	Citations were added to the text in Section 2.3 to support the validity of using a two-dimensional, vertically averaged model in this study.
6	Section 2.3, p. 11	The report states "a valid approximation for the non-stratified flow conditions that exist in the San Jacinto River". The report shall explain and provide data to justify this in further detail. One would assume that in some cases depending on San Jacinto River flow and the tidal effect that there would be some stratification in areas at the fresh water and salt water interchange.	Text was added to Section 2.3 to discuss the validity of this approximation.
7	Section 2.3, p. 11	It appears that consideration was given to the nearby outfalls that may impact the flow of the river. However, it is not apparent that influence of current movement from barge traffic was considered, nor the impact of waves. The movement of constant barge traffic near the waste pits may impact sediment movement. While conducting San Jacinto River surface water sampling, Harris County has observed increased silting as a direct result of barge movement. Some areas are so highly silted that boats are no longer able to launch in areas previously used for such activity. The effects of barge traffic (using a prop scour or other appropriate model) and waves in the area of the waste pits shall be evaluated and described in the report.	The potential effects of ship and barge traffic on sediment transport within the USEPA Preliminary Site Perimeter will be evaluated during the Feasibility Study. Text was added to Section 4.1 concerning the effects of wind-wave resuspension.
8	Section 3 and Appendix A	The bathymetry and floodplain topography of the model domain were used to define the thickness (water depth) of each model cell. Various datasets were used to assign cell values. Where data were not available for individual cells, values were assigned by interpolation of existing cell data. Details of the interpolation method(s) are not provided in the report. The report shall include this information.	Text was added to Appendix A, which provides details of the methods used to combine and interpolate the bathymetry and floodplain topography datasets.
9	Section 3.1, p. 14	In footnote 7 it states that "sediment transport and contaminant fate model predictions are not relevant to this portion of the HSC". This statement shall be deleted from the footnote and shall be technically justified and supported with data within the text of the report. The explanation given in the report in support of this major assumption is not satisfactory.	Text was added to Section 3.1 to support the use of a simplified numerical grid to represent the Houston Ship Channel (HSC). Footnote 7 was deleted.

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EPA Comment Number	Report Section/ Page	EPA Comment	Response/Approach for Addressing in Draft Final Report
10	Section 3.2, p. 14	The report shall provide the vertical accuracy of the model grid. The USGS 10m DEM data have a vertical resolution of 1-3 meters (http://proceedings.esri.com/library/userconf/proc99/proceed/papers/pap629/p629.htm). The report shall provide confirmation that the model did not use these data in important areas in the model. An assessment of the vertical accuracy for the most critical areas within the model shall be provided. This has the potential to be a significant source of uncertainty, so more discussion and approach disclosure will be beneficial. In low, flat areas and depositional zones, are the elevation data good enough that the model inundates the area within acceptable tolerances? Does the model inundate critical areas 10% less than actual, 50% more, etc.? Was this assessed? If not, consider using satellite imagery and picking images with inundation during the model run period and determining if there is inundation in the model. By checking different inundation images and comparing to the model inundation extent, an assessment of the ability of the model to estimate floodplain inundation and deposition can be made.	Text that discusses the vertical accuracy of bathymetry and floodplain topography data was added to Appendix A. No Landsat images or aerial photos of the Study Area were found that could be used to validate the hydrodynamic model during high-flow events.
11	Section 3.3.1, p. 15	Inflow rates at the Lake Houston Dam include tainter gate discharge. However, the tainter gate position is adjustable and the methodology used to account for its rating curve with respect to its height variability is not provided. The report shall provide this information.	Text was added to Section 3.3.1 to clarify the specification of flow rate at the dam using the Coastal Water Authority (CWA) rating curve, including tainter gate discharge.

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EPA Comment Number	Report Section/ Page	EPA Comment	Response/Approach for Addressing in Draft Final Report
12	Table 3-1, p. 16	The reviewer obtained a report from CWA that contained the rating table for the spillway. The rating table includes discharges for overflow for the spillway, tainter gate, and flash board for a given stage. It appears that the flash board discharge has not been included in the cumulative discharge, and that there is a two foot difference in the rating tables. In Table 3-1, zero flow over the spill way is at 44.5, but in the CWA table zero flow is listed at 42.5. In addition, the CWA rating table includes tainter gate and flash board discharges down to 38 feet. The reviewer realizes that a different datum was used for lake level and that the rating curve was redone in 2007. For example, lake stage level in Table 3-1 at 46 is listed at 18,400 cubic feet per second (CFS) spill way and 9,900 CFS tainter for a total of 28,300 CFS, whereas the CWA rating at 44 shows 18,366 CFS spillway, 9,875 CFS tainter, and 1,959 CFS flash board for a total of 30,300 CFS. Apparently the model assumes that the flow out of the lake is based on the rating, but that also assumes the gates are open for each level. This is likely not the case at least at lower flows or we would have a flow of 8,600 CFS at water level 42.5 (CWA rating) from the tainter gate and flashboard alone. The main concern here is that it appears the outflow maybe higher than what is indicated in Table 3-1. The report shall provide additional information to confirm that Table 3-1 is valid, or correct it as appropriate.	Text was added to Section 3.3.1 and Appendix I to clarify the method to estimate flow rate at the dam using lake level data and the CWA rating curve. Comparisons of data-based (rating curve) and measured flow rates at the dam were added to Appendix I.
13	Section 3.3.1, p. 17	The report shall provide an assessment of how well the approach works for 1985-1996. To do this, use the same technique for the six stations for 1996-2010 and compare it to the discharge computed using the rating curve. Then include an assessment of the difference between these two approaches on a daily, monthly and annual scale for 1996-2010. A table of statistics will suffice for the assessment.	Results of an assessment of the flow estimation technique were added to Appendix I. Comparisons of flow rate determined using the estimation technique and CWA rating curve were made on daily, monthly, and annual time scales for 1996 through 2010.
14	Section 3.3.1, p. 18	The report shall provide the return period for the 356,000 CFS flow rate, and shall describe exactly where did this peak flow rate occur?	Text was added to Section 3.3.1 to provide this information.

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EPA Comment Number	Report Section/ Page	EPA Comment	Response/Approach for Addressing in Draft Final Report
15	Section 3.3.1, p. 18	The report discusses the flow rate of the San Jacinto River on October 19, 1994 (during the river fire and explosion event), as it related to the 100 year flood plain. This flow rate shall also be compared to the flow rate seen as a result of Tropical Storm Allison (2001) and Hurricane Ike (2008) since these two events devastated the vast majority of Harris County water ways.	Text was added to Section 3.3.1 to provide this information.
16	Section 3.3.2, p. 18 and 19	For the bayous along the Houston Ship Channel; a. The report shall provide each watershed drainage area as was done for the watersheds above Lake Houston in Section 3.3.1. This shall include the percentages for each watershed as well. Describe in detail how the surrogate locations were used. Figure 3-9 shows the plots, but is not very clear how this was used without further information. b. For filling in data gaps for the tributaries, the approach is not adequately defined. It cannot be determined if data gaps were filled directly from data from another station, or if a linear relation was defined between the stations and the gap was filled by defining the relation [y=mx+b] between the two stations. If the former was used, that is a problem. If the latter was used, that is adequate. A good approach would be to use MOVE1 record extension (freeware from USGS, part of the Streamflow Record Extension Facilitator version 1.0, see http://pubs.usgs.gov/of/2008/1362) to extend the record based on nearby stations. The approach for filling in the data gaps shall be described in the report.	Text was added to Appendix I to describe the methodology used to specify flow rates for tributaries to the HSC.

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EPA Comment Number	Report Section/ Page	EPA Comment	Response/Approach for Addressing in Draft Final Report
17	Section 3.3.3, p. 20	The water surface elevation (WSE) data at Morgan's Point were added to the model at the location of the Battleship Texas State Park location where they were used as a boundary condition at Battleship Texas State Park. The hydraulic regime at the confluence of the Houston Ship Channel at the San Jacinto River (Battleship Texas gauge station) is fundamentally different than that which occurs at the mouth of the San Jacinto River at Galveston Bay (Morgan's Point gauge station). While approximately symmetrical tidal currents can be expected at both the Battleship Texas and Morgan's Point gauge stations during non-event periods, the symmetry should not exist during periods of flooding. A decoupling of water surface elevations between stations is expected during flood events due to a local heightening of water surface elevation from increased freshwater flow at the mouth of the Houston Ship Channel compared to that of the more tidal-influenced, more open marine environ of Galveston Bay (e.g., Thomann, 1987). Consequently, the water surface elevation response at the downgradient model domain boundary (Battleship Texas) would be significantly different than the water surface elevation response downstream at Galveston Bay (Morgan's Point) during a flood or surge event. As such, the use of data from Morgan's Point may be inappropriate for use in calibrating the subject model. The report shall use the following approach for the boundary condition at Battleship Texas State Park: use record extension of the partial record Battleship Texas State Park site using Morgan's Point as the index station. This way you are using actual data at the actual point whenever possible and you have an assessment of the accuracy of the synthesized record. Otherwise you do not have a good metric to define the accuracy of the assumption that the data at one site can be applied at the other. Using the record extension software you will use actual data when available and you will have statistics quantifying the objective approach used to create the best-possible synthesized record. The reviewer agrees that the time period shown from Apr-July shows good correlation, but the figure only shows a small time period and there could be differences in WSE during other time periods.	Additional comparisons of WSE data collected at the Battleship Texas/Lynchburg and Morgan's Point tidal gauge stations were included in Section 3.3.3. A sensitivity analysis was conducted to evaluate the effect of using WSE data collected at Morgan's Point on hydrodynamic and sediment transport model predictions (see Section 4.4).

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18	Section 3.3.3, p. 20	Verified WSE data from Morgan's Point are available from 1996 to present. Thus, it seems that predicted WSE were used in the model from 1990-1996 and that data from 1996 to 2011 were used for the downstream boundary conditions. The report shall clarify this matter.	Text was added to Section 3.3.3 that describes historical WSE data collected at Morgan's Point and the method used to specify WSE at the downstream boundary during periods when WSE data were not available.
19	Section 3.3.3, p. 20	The report shall provide the location of the downstream boundary condition explicitly stated, and provide information about which data represents the boundary condition.	Text was added to Section 3.3.3 to clarify the location of the downstream boundary of the model and specification of WSE at that boundary.
20	Section 3.3.3, p. 20	This section selects 16 ppt as the salinity inputs from the bay boundary of this model. The report shall describe how this value was selected. Recent work (for example: Technical Support for the Analysis of Historical Flow Data from Selected Flow Gauges in the Trinity, San Jacinto, and Adjacent Coastal Basins at http://www.twdb.state.tx.us/RWPG/rpgm_rpts/0900010996_GalvestonBaySalinity.pdf) presents the fact that salinity does vary in this system contrary to the statement in this section that states "Salinity has minimal variation in the system..." The report shall clarify whether water density variation within the range of salinity variation at this site affects potential transport of sediments and ultimately the pollutants at this site. In addition, the report shall report the effect of the longitudinal salinity gradient on the hydrodynamics of the modeled water body.	Text was added to Section 3.3.3 that describes how the salinity value at the downstream boundary was determined. A sensitivity analysis was conducted to evaluate the effects of the salinity value at the downstream boundary on hydrodynamic and sediment transport model results (see Section 4.4).
21	Section 3.4, p. 20; and Figure 3-13	Figure 3-13 shows three acoustic doppler current profiler (ADCP) locations, but only two are described in the text. The report shall describe the ACDP in 2010 and the reason for relocation in this section.	Appendix B provides a description of ADCP locations during the 2010 and 2011 surveys.
22	Section 3.4, p. 20; and Appendix B	ADCP data during May 10 – July 13, 2011 were used in calibration, but data during July 14 through November 15 (Appendix B) were not compared to the model results. The report shall include a comparison of the model results to the July through November data.	Zero flow rate occurred at the Lake Houston Dam between July 14 and November 15, 2011. These low-flow conditions during this 4-month period produced low tidal current velocities, which were very similar to the velocity data collected during the May 10 to July 13 period. Model-data comparisons for the July-November period would be a repetition of the model validation results from the May-July 2011 period. Thus, conducting another validation simulation for the July-November would not

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			provide additional information about the predictive capability of the hydrodynamic model.
23	Section 3.4, p. 21	The comparison of the east-west component of the depth-averaged velocity shown in Figure 3-14 shows significant differences between predictions and measurements. The north-south component shows significant differences during the peak flows on July 2–4, 2010. Statistical parameters (e.g., RMS error, Relative RMS error) shall be included that quantifies the agreement between the measured and predicted stages and flows. Based only on the comparison of the plotted times series shown in this figure, we do not completely agree with the last sentence in this paragraph that states “the calibration results demonstrate that the model is able to simulate the hydrodynamics within the Study Area with sufficient accuracy to meet the objectives of this study.” At a minimum, the report shall include a sensitivity analysis to assess these observed differences between the measured and simulated depth-averaged velocities and provide a discussion of the results.	Refined comparisons of measured and predicted current velocities and WSE during the 2010 and 2011 calibration periods were added to Section 3.4, including a statistical analysis.
24	Section 3.4, p. 21	From the plots, it appears that the model may tend to mute high and low flows, so this may be an issue during high flow events when much of the sediment transport occurs. The report shall provide simulated and measured flow duration curves comparisons for model calibration. The comparisons would help with the high and low flow calibration. The first step would be plotting the flow duration curves and deciding if the calibration is good enough.	Sufficient flow rate data are not available for conducting a comparative analysis of flow duration curves based on measured and predicted cross-channel flow rates. Current velocity data collected during the equal-width increment (EWI) survey on May 19, 2011, could not be used to reliably validate the hydrodynamic model because they were collected during ebb tide conditions when zero flow rate occurred at Lake Houston Dam. Current velocities were tidally dominated and relatively low on that date. Thus, any estimates of cross-sectional flow rate would be representative of tidally-driven flow in the river. Comparison of predicted, tidally driven flow rate at the EWI survey location would be problematic due to uncertainties in timing during the ebb tidal cycle, as well as the low velocities observed during the survey.

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EPA Comment Number	Report Section/ Page	EPA Comment	Response/Approach for Addressing in Draft Final Report
25	Section 4.1, p. 22 and 23	The report states "Changes in bed elevation predicted by the sediment transport model are not incorporated into the hydrodynamic model…successful calibration and validation of the model indicates that this limitation in the modeling framework does not have a significant effect on the predictive capabilities…" The reviewer understands that over a short period of time, this makes sense. However, the model runs for 21 years and sediment is not being moved to new locations over time. Conceptually this does not make sense. If the model is going to be run for 21 years, the reviewer is having trouble understanding how the fate of the sediments can be adequately tracked when the sediment is not being accumulated in the model over time. The model shall provide for the accumulation of sediment and then subsequently adjust velocities based on the altered bathymetry, or shall provide information/statistics supporting the statement that changes in bed elevation does not have a significant effect on the predictive capabilities of the model. Then, the report states, on page 23, "… numerous other sites have confirmed that this limitation does not significantly affect the utility of this model." Alternatively, the report shall cite three to five publically available references supporting this approach of not incorporating bed elevation changes in the hydrodynamic model for long term models.	An analysis of the potential effects of bed elevation change on hydrodynamics within the USEPA Preliminary Site Perimeter was conducted and included in Section 4.3.
26	Section 4.2.2, p. 25	The reference Ziegler and Nisbet (1994) was cited as the source of the criteria for determining if sediment from a given grab sample could be classified as being cohesive – D50 < 250 µm and clay/silt content > 15%. These criteria are believed to be too general in that a sediment's degree of cohesiveness would depend more on the cation exchange capacity of the dominant clay minerals in the sample as well as the ratio of clay to silt size sediment in the sample. As such, either a more site-specific determination shall be made or a more traditional definition of D50 being < 63 µm shall be used.	The criteria used to classify a sample as cohesive bed sediment were developed using grain size distribution data and visual classification information from approximately 200 samples. In addition to being published in the peer-reviewed literature, this approach has been used at numerous contaminated sediment sites to classify bed sediment as either cohesive or non-cohesive. The suggested change in methodology was not implemented.

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EPA Comment Number	Report Section/ Page	EPA Comment	Response/Approach for Addressing in Draft Final Report
27	Section 4.2.2, p. 26	A justification for assuming the sediment bed was hard bottom in the San Jacinto River channel downstream of Lake Houston Dam and in the HSC shall be added to the report. How far downstream in the river channel was a hard bottom assumed? In addition, the report shall comment on potential impacts of these assumptions on sediment and contaminant transport processes in proximity to the Superfund site.	Text was added to Section 4.2.2 to justify assuming that the San Jacinto River bed from the dam to Grennel Slough (see Figure 4-2) and the HSC bed were hard bottom.
28	Section 4.2.2, p. 26	The report states "Bed-probing was available from 68 locations." Figure 4-1 appears to have 68 sample locations, but text on page 24, 2nd paragraph, states a total of 139 grain size distribution (GSD) samples were collected in 2010 with another 30 in 2011. The report shall clarify if the 68 locations are a subset of the 169 GSD samples.	Text was added to clarify the relationship between the bed probing locations and GSD samples.
29	Section 4.2.2, p. 26	The report shall show where the 16 dry density samples for cohesive bed areas were collected, as well as the 14 dry density samples for non-cohesive bed areas.	Information was added to Section 4.2.2 to show where the dry density samples were collected.
30	Section 4.2.2, p. 27	The report states that the maximum bed shear stress in the study area was 87 Pa. This must be a typo; the report shall correct this value of the maximum shear stress. The next paragraph states that the average of 53 GSD samples obtained from non-cohesive areas was used for the D50 value for non-cohesive bed grid cells. The report shall show where the 53 samples were collected.	The text was edited so that the maximum shear stress is correctly stated. Information was added to Section 4.2.2 to show where the 53 GSD samples were collected.
31	Section 4.2.2, p. 28	The report shall state the range of D90 values found in the GSD data and justify the use of the 1,000 µm value; is 1,000 µm the median value?	Text was added to justify and explain the method used to specify the D90 value. The sensitivity of the model results to the D90 value was evaluated, see Section 4.4.
32	Section 4.2.2, p. 28	Bed erosion parameters were assumed to be horizontally constant as the Sedflume data did not indicate any discernible spatial pattern. The effect of this assumption was addressed by a sensitivity analysis. However, the analysis varied the erosion parameters uniformly throughout the model; it did not change the erosion parameters within the area of interest for potential remediation. A sensitivity analysis that varies key parameters horizontally within the EPA preliminary perimeter shall be conducted and included in the report.	The sensitivity analysis did vary the erosion rate parameters using lower- and upper-bound values, within the USEPA Preliminary Site Perimeter (PSP); however, no horizontal variation of erosion rate parameters within the PSP was specified, which is consistent with the first sentence of this comment. No reliable method for specifying horizontal variation in erosion rate parameters within the PSP is evident based on the Study Area data. Thus, a sensitivity analysis that included horizontal variation in those parameters was not conducted.

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33	Section 4.2.2, Table 4-2	The critical shear stress of 0.62 Pa for the top layer indicates that this 5 cm layer must be fairly consolidated. The report shall provide the average bulk density of the top layers in the 15 cores.	Information on bulk density data collected from Sedflume cores was included in Appendix E.
34	Section 4.2.3, p. 29	A reference to "Figure 4-13" shall be added to the end of second sentence.	The text was modified as requested.
35	Section 4.2.3, p. 30	The report shall be corrected to identify Equation 4-5 is a log-log relationship.	Equation 4-5 is a linear equation in log-transformed space. Thus, the term "log-linear relationship" is correct. No change was made to the text.
36	Section 4.2.3, p. 31	The report states "The assumed trapping efficiency was based on professional judgment." The report shall explain the reasoning associated with the professional judgment that was used to estimate the trapping efficiency of Lake Houston, including data or references for this statement. This is likely an important assumption and there should be several cited references justifying the rate. In the last sentence of the first paragraph it states "which was adjusted during model calibration". The report shall clarify whether the composition of the incoming load was adjusted, or was the assumed trapping efficiency adjusted during calibration? In addition, the report shall explain why TSS data (which typically would include inorganic and organic solids) used to develop Eq. 4-5 and not concentrations of suspended inorganic sediments, especially considering that production and transport of organic matter was not simulated.	The text was clarified to state that the composition of the incoming sediment load was adjusted during model calibration. Text was added to Section 4.2.3 to explain uncertainty related to the assumed trapping efficiency of Lake Houston. The text was clarified to indicate that suspended sediment concentration (SSC) data were used to develop the sediment rating curve (Equation 4-5).
37	Section 4.2.3, p. 31	The report shall clarify what sediment size class was set to 25 mg/L at the downstream tidal boundary and tributaries to the HSC. Because these were TSS data and not just concentrations of inorganic sediment, the report shall describe how the 25 mg/L was divided into organic and inorganic size classes in the model?	The text was modified to clarify the specification of incoming sediment loads from HSC tributaries and at the downstream boundary.
38	Section 4.2.3, p. 31	The report shall provide a reference or web based location to find the total suspended sediment (TSS) data collected as part of the Galveston Bay National Estuary Program. The reviewer searched for this data and could not locate it.	The text was modified to include reference for these data.

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39	Section 4.3, p. 31	The last sentence in the first paragraph states that model performance was also evaluated by comparing measured and predicted TSS concentrations at the two TCEQ stations shown in Fig. 4-18. This comparison shall be shown and discussed in the report.	Additional comparisons and discussion of predicted SSC and measured TSS concentrations were provided in Section 4.3.
40	Section 4.3, p. 32	The report indicates that the sediment transport model was, in part, calibrated using the settling speed of Class 1 sediment. The Class 1 settling speed used in the calibration is reported to be 1.3 m/d. However, the equation used for Class 1 (cohesive) settling is not evident in the information provided in the main text and Appendix G of subject report, or from James et al. (2005). The report does not include information regarding the specific model used in the determination of the Class 1 settling speed and/or the equivalent effective median grain size of the Class 1 fraction. The report shall include this information.	The text was modified to include information related to the settling speed of size Class 1.
41	Section 4.3, p. 33	a. In the second paragraph, wording shall be added to the sentence ("This comparison of predicted ….") that begins in the 11th line of this paragraph, that while the overall distribution of NSR might have been reproduced by the model, there are areas where localized differences did occur. Statistical parameters shall be included in the report that quantifies the level of agreement between the measured and predicted NSR. b. The report shall clarify whether the sediment mass balance mentioned in the next to last sentence in this paragraph was performed over the entire model domain. c. Given that "a wider range of bed elevation change is predicted in the non-cohesive bed areas", what conclusion was reached specifically for the non-cohesive bed areas in the model domain or Study Area?	Text and figures were added Section 4.3 that provide refined comparisons of predicted and measured NSR values. The text was modified to indicate that the mass balance was for the entire model domain. Additional discussion related to model performance in non-cohesive bed areas was included in Section 4.3.
42	Section 4.3, p. 34	The cumulative frequency plots of TSS shown in Figures 4-24 and 4-25 do not show the timing of the sampling and may fail to show a systematic error. Time series plots for the two sampling stations shall be included to compare the model and TSS data.	Text and figures were added to Section 4.3 that discuss and show time series comparisons of predicted and measured TSS concentrations at the two TCEQ stations.

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43	Section 4.4, p. 35	The report shall describe how the rates of gross erosion, gross deposition, etc. that are graphed in Figure 4-26 were calculated. Also, the report shall explain how the increase in net deposition of 110% to 150% was calculated.	Additional text was provided in Section 4.4 clarify these results.
44	Section 4.4, p. 35	Figures 4-26 and 4-27 show sediment transport sensitivity results for the entire Study area. Because remedial measures will focus on specific areas within the Superfund site, sensitivity analysis results for the portion of the Study area within the site shall also be reported.	Additional text and figure were included to evaluate sensitivity results within the PSP.
45	Section 4.5, p. 36	The first sentence ends with the statement that "the model reproduces the overall distribution of NSR." Considering what the objective of this modeling study is and how the models are going to be used during the Feasibility Study, a quantitative measure of the model's agreement with "the overall distribution of NSR" shall be included in this report. In addition, a figure that shows the effect of spatial scale on model uncertainty, similar to what AnchorQEA has produced at other sites where they performed sediment transport modeling, e.g., the Lower Duwamish Waterway, WA, shall be generated for this sediment transport model.	Text and figures were added Section 4.3 that provide refined comparisons of predicted and measured NSR values. The spatial scale analysis could not be conducted because of the low number of data points (i.e., only 8 NSR values).
46	Section 4.5, p. 36	A consequence of designating the boundary condition for in-coming sediment load to be a proportion of sediment load entering Lake Houston is that the in-coming sediment load must equal 0.0 mg/L during periods when there is no discharge at the Lake Houston Dam. This shall be confirmed, and a discussion of the potential consequence to model calibration shall be included.	The method for specifying the incoming sediment load at the dam does set the load equal to zero when the flow rate at the dam is zero, which is realistic. Thus, the effects of zero sediment load at the dam during no-flow conditions are correctly incorporated into all model simulations. No discussion regarding the potential consequences of specifying zero load during zero flow conditions was added to the report (nor was necessary).

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47	Section 4.5, p. 36	The report states “This level of uncertainty in the incoming sediment load is typical…it is doubtful that significant improvements in the accuracy of current sediment loads used as model input could be achieved.” When the reviewer looks at Figures 4-24 and 4-25 (“Comparison of Predicted and Measured TSS Concentrations”) it appears the model may not be a meaningful management tool. The calibrations of the sediment model at the two calibration points seem poor, but perhaps just additional discussion in the text is required for a reader to understand. It appears that assuming TSS always equals 10 mg/L would be a better fit than using the model. These figures shall be discussed, because without mention, they seem to suggest that the model does not work for individual locations.	Text and figures were added to Section 4.3 that discuss and show comparisons of predicted and measured TSS concentrations at the two TCEQ stations.
48	Section 4.5, p. 36	The report states that the model uncertainty decreases with increasing spatial scale. The report shall include an explanation of the basis for this statement.	Additional text was included to explain for the basis for this statement.
49	Section 5.2.3, p. 41	The upstream loading concentrations were determined using average water column data from two upstream Total Maximum Daily Load (TMDL) stations and two downstream TMDL stations, all of which are outside the sediment transport model’s “active” grid. The report does not include the TMDL data sets and corresponding data quality used to determine contaminant concentration boundary conditions presented in Table 5-1. The report shall include this information.	A table containing the TMDL water column sampling data that were used in the model for boundary conditions and calibration was added to Appendix I. Text referencing the some of the TMDL study’s quality assurance procedures for these data was also added to Appendix I.
50	Section 5.2.3, p. 41	Based on the map (Figure 5-4), the TMDL site 11200 does not appear to include any point sources above that area. The report shall include the rationale on why this site was expected to have higher sediment concentrations due to its distance from Lake Houston. Several points are being reduced for starting concentrations due to potential other sources, but this upper site should have more justification for this reduction.	Text to further clarify that the increase in water column concentration between the dam and the sample locations used to set the upstream boundary condition is due to diffusion flux from sediments was added to this section, as well as to Sections 5.3.1 and 5.3.3.2.1.
51	Section 5.2.3, p.42	The sentence that begins “Therefore, the average ..” mentions five inflow boundaries with the HSC. Those five inflow boundaries shall be labeled on a figure.	This sentence was revised to reference Figure 3-8, which shows the five bayous on HSC.

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52	Section 5.2.5.2, p. 46	Initial model conditions for sediment concentrations of TCDD, TCDF and OCDD were adapted to the model domain from data collected for TMDL studies between 2002 and 2005. The initial grid values appear in Figure 5-7a through Figure 5-7c. The upstream initial model sediment concentration was determined by averaging five (5) values measured in the San Jacinto River. However, the time period and flow conditions of the sampling event(s) used are omitted in report. The report shall include this information.	Text describing the collection dates (and flow conditions at the time of sampling) for the samples used to define the sediment initial conditions in the upstream portion of the grid was added to this section of the report.
53	Section 5.2.5.2, p. 47	Congener concentration data for deep sediment (> 6 inches) in the 2005 data set are sparse. Consequently, deep sediment initial concentrations were set equal to surface sediment concentrations. A summary narrative describes the results of a sensitivity analysis in which simulations using deep sediments with initial concentrations "two orders of magnitude" higher than surface sediment produced results "nearly identical" to those using initial concentrations equal to surface sediment concentrations. The sensitivity analysis was performed using problematic net sedimentation rates and Class 1 sediment characteristics, and the conclusion contains significant and un-quantified uncertainty. The report shall note this uncertainty.	Edits made elsewhere in the report (i.e., Section 4) address the commenter's issues related to NSR and Class 1 sediment characteristics. Nevertheless, text acknowledging the uncertainty in the sediment transport model was added to the discussion in Section 5.2.5.2.
54	Section 5.2.6, p. 48	The determination of site-specific contaminant partitioning in the water column is described using various data sets, numerous literature sources and methods of regression analysis. While the approaches used in the determinations of contaminant partitioning are generally acceptable, the procedure highlights the high range of variance inherent in the data sets and, in turn, the apparent low degree of correlation associated with the resulting regressions (e.g., Figure 5-9). The subject report provides no discussion of the magnitude of statistical uncertainty associated with the selected partitioning values. The report shall include this discussion.	Additional discussion of the variability in estimated partition coefficients, including quantification of the variability associated with the selected values, was added to the report in Section 5.2.6.

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55	Section 5.2.6.2, p. 50	The particle-phase contaminant concentration is determined using the particulate dry mass density in the sediment bed (Equation 4, Appendix H). The dry density of Class 1 sediment is 0.83 g/cm3 (Sec 4.2.2), a fine-to-medium sand consisting mostly of silicate mineral grains with a sediment dry bulk density of 1.4 g/cm3 (Appendix C and Sec 5.2.8.1). Hence, particle-phase contaminant concentrations for total suspended solids in the water column are determined using the dry density of a sediment class (Class 1) for which much of the particles are too coarse and dense to be "suspended." Therefore, the mass of contaminant for total suspended solids (in water column) is over-estimated, and the contaminant mass in sediment is under-estimated. The report shall correct the density of Class 1 sediment to reflect the mix of grain size distributions used for the Class 1 sediment.	No changes to the text in this section were required, as the clarifications made to Section 4 to more clearly distinguish cohesive/non-cohesive sediment bed areas versus sediment size classes address this comment.
56	Section 5.2.6.2, p. 51	The report shall provide a reference for the equation that relates Kdoc to Kow.	A reference was added to the text in this section as requested.
57	Section 5.2.7.3, p. 56	Dissolved organic carbon concentrations in the water column vary through time (Figure 5-13). A constant value for dissolved organic carbon concentration is set in the model at an average value of 10 mg/L. However, the visual inspection of the plotted TCEQ TMDL data upon which the average value is attributed indicates the average dissolved organic carbon value is significantly less than 10 mg/L. The report shall explain this difference, or shall use a value consistent with the data.	The text in this section was updated to clarify that the average dissolved organic carbon (DOC) of 10 mg/L was calculated using both the TCEQ data (which are shown on Figure 5-13) and the TMDL study data (which are not shown on that figure).
58	Section 5.3.1, p. 62	The "factor of 1.5 to 3" shall be changed to "multiplicative factor of 0.33 to 0.67."	The requested change was made.
59	Section 5.3.2.1.1, p. 65	To show more conclusively that the model captures the lateral variation in the water column concentration reasonably well, as it states in the last sentence in the third bullet, the time series of predicted concentrations at the grid cells in which the TCEQ data and TMDL study data were collected shall be plotted, and the measured concentrations shall be plotted on these two plots for comparison, and the results shall be described in the text.	Additional text and figures were added to Section 5.3.2.1.2 to illustrate the degree to which the model captures the observed differences in concentration between these two sample locations as requested.

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60	Section 5.3.2.1.2, p. 66	The temporal patterns in model predictions shall be shown averaged over only the EPA's Preliminary Site Perimeter as well as averaged over only the cells within the perimeter of the northern impoundments. Data measured within these two areas shall also be shown on these time series plots.	The requested time series of model outputs were added to this section of the report.
61	Section 5.3.2.1.3, p. 68, line 1	"Laterally and longitudinally averaged" shall be added before "Model predictions of". Also, as seen in Figures 5-20a-b, the model over predicts the TCDD and TCDF particulate concentrations and under predicts the dissolved concentrations at the northern impoundments. The report shall discuss/comment on this as well as the implication of the under prediction of the dissolved concentrations on estimating the biota levels.	With regard to these figures (now Figure 5-242-b), the comment has it reversed: the model tends to over predict dissolved phase concentrations and under predict particulate phase concentrations near the northern impoundments. Nonetheless, additional text was added to this section to acknowledge the under/over-prediction of particulate and dissolved phase concentrations. This report does not address estimation of biota levels; that will be addressed in a future deliverable associated with the Feasibility Study.
62	Section 5.3.2.2, p. 69	The smaller decreases in the model averaged concentrations compared to the data-based SWACs seen in Figs. 5-21 most definitely need to be taken into consideration when the model is used during the Feasibility Study. The statement "are considered to be within the range of uncertainty in the SWAC-based analysis" shall be supported by providing the estimated uncertainty for this uncertainty. If the uncertainty was not calculated, on what basis was this statement made? It also states that the "SWACs are strongly affected by a few high concentration samples." The five identified outlier data points shall not be included and the SWAC values be recalculated. Both the original and new SWAC analysis shall be included in the report.	The veracity of the model-data comparisons will be taken into account when the model is used during the Feasibility Study as suggested by the comment. Additional discussion of the uncertainty associated with the data-based SWAC calculations was added to this section of the report, including an evaluation of how the SWACs change upon exclusion of the limited number of high concentration samples, as requested in the comment.

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63	Section 5.3.2.2, p. 69	Assessment of time trends of contaminants in surface sediment between 2005 and 2010 was performed on area-weighted concentrations from two (2) datasets through time. The assessment concludes that decreases of congener concentrations occurred during that period. However, the report does not include maps showing the sampling locations and Thiessen polygons for each event that was used in the assessment. Additionally, no information is provided with which to place the assessment into a context related to the historical flow regime prevalent prior to each sampling event. The report shall provide these maps and describe the flow regime prior to each event.	A figure showing the polygons from the 2005 and 2010 datasets was added to the report in this section. Given that this section of the report pertains to changes between the 2005 and 2010 sampling events, the flow regime of that intervening period is most relevant. Such discussion was added to the report.
64	Section 5.3.2.2, p. 70, 2nd paragraph, line 6	The statement "they are within a factor of 2" shall be changed to "they are within a factor of 2.5."	The requested change was made.
65	Section 5.3.3, p. 71	Contaminant model sensitivity analysis was done separately for four parameters rather than jointly for combinations of parameters as was done for the sediment transport model. While the model results showed little variation to individual parameters, combinations of parameters may produce greater variations. This issue shall be addressed in the report.	A new sensitivity analysis that is based on a combination of individual parameters to which the model was shown to be either somewhat or relatively insensitive was conducted and is documented in this section of the report.
66	Section 5.3.3.2.1, p. 72	A sensitivity analysis was performed on the in-coming upstream sediment load concentration boundary condition at Mile 6. The concentration values were varied over a range of two standard errors (95%) for TCDF and OCDD. However, the mean about which the standard errors range is derived from previous TMDL studies. The flow conditions represented by the mean in-coming sediment load concentration are not provided. The variance of sediment concentration (2σ) that is used in the sensitivity analyses cannot be correlated to flow conditions. The report shall correlate the variance of respective sediment concentrations to the corresponding range of flow conditions (return events).	The text in this section was further clarified to explain that the variance of the concentration boundary conditions may be related to flow (although the data were insufficient to establish correlations between the two, as discussed in Section 5.2.3). The discussion of boundary conditions (Section 5.2.3) was also revised to clarify that even though a constant concentration is set for the boundary, the load will vary over time because the flows are not constant.

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67	Section 5.3.3.2.1, p. 73	Referring to Fig. 5-23a, the report shall comment on the comparison between the TMDL study data at the two stations upstream of river mile 10 and the range of model predictions from lower to higher upstream boundary conditions.	Additional discussion was added to this section of the report as requested.
68	Section 5.3.3.2.3, p. 75	While the range of site-specific partitioning coefficients inherent in the approaches used in their determination is not described, a sensitivity analysis was performed. In the sensitivity analyses, the partition coefficients were varied within a range of ±0.3 log units resulting in relatively insignificant effect on the modeling results. The sensitivity analyses were performed over a range of partition coefficients that significantly under-estimates the range of variance demonstrated in their determination. To provide a more meaningful gauge for the sensitivity analysis, the statistical variance associated with the coefficients' determination shall first be defined, and then sensitivity analyses using a more appropriate coefficient range shall be performed.	As discussed in the response to Comment #54, an uncertainty range associated with the partition coefficients was estimated and provided in the report. The sensitivity analysis was updated to use that uncertainty range (which is larger than that previously tested) as requested.
69	Section 5.3.3.2.4, p. 75	The report shall be revised to indicate that the model is more than "somewhat sensitive" to porewater dissolved organic carbon (DOC) since model predictions vary by up to a factor of 4 for TCDF.	The requested change was made.
70	Section 6.1, p. 81	The statement "the fate model predicted a decline in surface sediment concentrations within the area surrounding the Site …, consistent with data-based evaluations" shall be modified to reflect the factor of 2.5 differences noted in a previous comment.	Clarifying text was added to this section of the report as requested.
71	Section 6.2, p. 81	The report states that the model will be used to "evaluate the impacts of the TCRA capping project on dioxin/furan transport." The report shall describe the changes that will have to be made to the sediment transport model's parameterization in order to evaluate the impacts of the TCRA capping project.	The requested discussion was added to the report.
72	Figures	A map shall be included, which displays gross erosion rates in the model domain, including all cells for which Egross=0.0, based on Equation G-26.	Erosion rate is temporally variable, so it is not possible to provide this type of map.
73	Figures	The report does not include figures showing net erosion and net deposition within the model domain for specific return event simulations (e.g., 5-year, 10-year, 20-year, etc.). The report shall include figures with this information.	Flood events for specific return periods were not simulated during this study; thus, these figures cannot be provided.

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74	Figures	There are several figures that include an explanation about samples that have an average of greater than 50 percent non-detect explained with an open symbol, but there are not open symbols on the figures. This statement shall be removed, or the symbols added, from those figures.	The note was removed from figures that do not have open symbols.
75	Figure 1-1	The study domain shall be delineated in this figure.	USEPA's Preliminary Site Perimeter is shown on this figure.
76	Figure 1-2	Figure 1-2 (referenced on p. 3) is missing. Figure 1-2 shall be added to the report.	Figure 1-2 was added to the report.
77	Figures 3-2 and 3-3	The report shall show the location of Grennel Slough on the maps. Further, the shoreline legend box in Figure 3-2 is confusing. What feature in this figure is the white shoreline supposed to represent? The report shall clarify the legend box.	Figures/maps were modified to show the location of Grennel Slough and clarify the shoreline legend.
78	Figures 3-14, 3-15, and 3-16	For figures 3-15 and 3-16, the y-axis scale is larger than in Figure 3-14 and it makes the comparison more difficult to see. It appears the amplitude of the velocity and water surface elevations are muted in the simulation compared to the measured data. Perhaps Z0 is too high? The report shall include a discussion of the potential outcome and interpretation of muted simulations compared to measured data (Section 3.4, p. 21), which may be useful if decreasing Z0 or additional calibration causes other unintended problems.	These figures were modified so that the y-axis scales were consistent. Additional discussion of hydrodynamic performance was included in Section 3.4.
79	Figure 4.1 and C-2	This figure shall use a different color for non-cohesive locations because the brown is hard to see on the figure. Also, symbols used to show locations are very large making it hard to see other features on the map, and shall be revised. Figure C-2 and 4-1 appear to have inconsistencies as well. See the upper reach of the San Jacinto River where locations for sampling on one figure are not on the other. The report shall explain why there are differences in sampling locations in these figures.	Figure 4.1 was modified as requested. The text was modified to clarify the differences in sampling locations between Figures 4-1 and C-2.
80	Figure 5-4	In the legend box for Figure 5-4, the red triangle is labeled as "Upstream Inflow Boundary". However, the two red triangle locations are not at the model's upstream boundary. The labeling in the legend box shall be corrected.	The legend text was clarified to indicate that the stations represented by the red triangles were used to define the boundary conditions.
81	Figures 5.19 a-c	The San Jacinto River flow shall be changed to a log scale, so that the discharge is shown in the same scale as the predicted dioxins/furans.	The requested change was made on this and similar figures.

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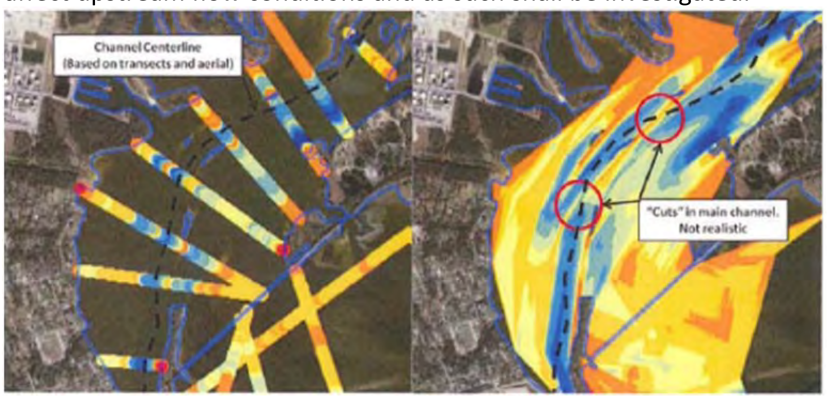
82	Figures 5.21a to 5.21c	The report did not discuss the potential skewness of the datasets used in Figure 5.21a through Figure 5.21c. Similar conclusions could be reached if more Thiessen polygons had lower average concentrations in 2010 due to location – and not actual decrease in sediment concentration. The report shall evaluate the potential skewness of the datasets and its effects on sediment concentrations. The report shall also define the numbers and symbols that are located on the top line of these figures.	Additional discussion of skewness of the 2005 and 2010 datasets was added to Section 5.3.2.2 of the report (see also response to Comment #62). The figures were revised as requested to describe the caret symbols, which corresponding to data points that fall above the upper y-axis value (and that the accompanying numbers indicate more than one data point at a given x-axis value).
83	Appendix A	With regard to Figure A-3, upstream bathymetric interpolation cuts the main channel twice near Grennel Slough (see figure below). This may affect upstream flow conditions and as such shall be investigated.  	A sensitivity simulation was conducted to evaluate the effect of the bathymetric interpolation on model results; see Section 4.4 for a discussion of the results of this analysis.
84	Appendix A, p. 2	The bathymetric survey did not cover the area within EPA's Preliminary Site Perimeter (see Figure A-1). This appears to be a significant gap in the bathymetry data needed for the model. Explain why data within this area was not obtained and describe the data used to set the depths of model cells in this area.	Bathymetry survey data were available within the PSP. Text was added to Appendix A that clarifies which data were used within the PSP.
85	Appendix B, p. 2	The ADCP measurements were conducted May 10 through November 15, 2011. However, Figures B-1 through B-3 show data for May and June only. The remaining velocity data shall be plotted and included in the report.	Figures displaying ADCP data collected during the period from July through November 2011 were included in Appendix B.

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86	Appendix B, p. 2	The ADCP data were not obtained at high flows because such flows did not occur in 2011. The report shall consider conducting ADCP measurements during high flow events if such flows occur in the near future?	No additional ADCP deployments will be conducted.
87	Appendix C, p. 2	The numbers of bed probing in Appendix C do not match with the numbers in the main body of the report (68 verses 98). The report shall clarify this discrepancy.	The Appendix C text was modified to clarify this discrepancy.
88	Appendix D, p. 2	The report shall provide the location of the precipitation gage for station 710.	The Appendix D text was modified to provide the location of this precipitation gauge.
89	Appendix D, Figure D-1	The figure shall use a different color than black for the site locations on map.	Figure D-1 was modified as requested.
90	Appendix D, Figure D-2	This figure, which is a TSS concentration plot, defines the cross-sectional data point as EDI (equal discharge increments). EWI (equal width increments) is listed on page 2. The report shall clarify if EDI or EWI was used for the data collection at the cross section.	The Appendix D text was clarified as requested.
91	Appendix E	A single value for the three erosion rate parameters was obtained for each of the five depth intervals from each core. A "log-average" (geometric mean) value was determined for the proportionality constant, A (Equation E-1), at each depth interval (Table E-6). As is normal, the geometric mean results in values of A for the Sedflume data sets (Table E-1 through Table E-5) are significantly lower than the arithmetic mean for the same data sets. Use of the lower values of A results in significantly lower values of the average gross erosion rates for each depth interval (Equation E-2). No rationale is provided to justify use of the geometric mean for the proportionality constant, and the report shall provide this rational.	The text of Appendix E was modified to provide justification for the methodology used to calculate a representative value for the erosion rate constant (A).

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92	Appendix E	The results of the Sedflume experiments were used to develop average critical shear stress (τcr) values for each sediment layer (e.g., Table E-1 through Table E-5). However, the average critical shear stress (τcr) values (Table E-6) were determined using the arithmetic mean, not the geometric mean (as for the proportionality constant), which results in the significantly higher value of the two means. The use of the higher arithmetic average value, rather than the lower geometric average value for the critical shear stress (τcr) results in a lower gross erosion rate (Egross; e.g., Equation E-2). Together with the geometric average of the proportionality constant, the use of the arithmetic average of critical shear stress reinforces a biased tendency towards lower erosion in the model domain. The report shall provide a rational for the use of the arithmetic mean.	The Appendix E text was modified to provide justification for the methodology used to calculate a representative value for the critical shear stress.
93	Appendix F	Of the ten (10) cores used in the 137Cs isotopic study, data from only one core (SJR1005) were usable (e.g., Table F-3). Evaluation of the data from Core SJR1005 indicates there were only two detections (Figure F-6). The two data points from Core SJR1005 were used to assign a date to the corresponding sediment depth from which a net sedimentation range was determined (e.g., Table F-3). However, the report does not provide which of the four (4) typical interpolation methods (e.g., USGS, 2004) were used. The report shall include this information. In addition, include the r2 values for the regression lines of the slopes for the upper and lower bounds.	There are four models discussed in USGS (2004) for using Pb-210 activity data to estimate NSR values. For this study, the constant sedimentation rate (CF:CS) model was used. The Appendix F text was modified to include this information, along with the correlation coefficient (R^2) values for regression analysis.
94	Appendix F and Appendix H	The $_{137}$Cs and $_{210}$Pb activity analytical results were reported with significant experimental error (e.g., Figure F-2 through Figure F-11, Subject Report). Linear regression was performed to find the slope of the line defined by those 210Pb data that were judged to be unsupported (Append F, Subject Report) versus their core depth to determine net sedimentation rates (Figure F-12 through Figure F-26, Subject Report). However, the regressions do not incorporate the variance of experimental error associated with each datum. Therefore, a range of slopes and, consequently, net sedimentation rates, exists at each core location. Only "mean" net sedimentation rates are reported, but not the significant deviation inherent in the analyses. Use of 137Cs isotopic data from a	The effects of measurement uncertainty for Pb-210 activity were incorporated into the estimation method for NSR. Quantified results of this uncertainty analysis were provided in Appendix F.

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		sediment core for determining net sedimentation rates and/or age dating is predicated upon corroborating data obtained from other cores in the same depositional system (e.g., USGS, 2004). However, in this instance, there are no such corroborating data. Therefore, the single 137Cs net sedimentation rate reliability or applicability to the model domain cannot be determined. An evaluation of the net sedimentation rates in the model domain was also performed using the 210Pb isotopic system. Contrary to the more suitable applicability of the 137Cs isotopic system to a depositional environment that is relatively dynamic, the 210Pb system "… performs best in relatively quiet depositional areas …" (Jeter, 2000). The 210Pb system age dating method is "… more useful for age-dating cores from low-sedimentation-rate lakes with undisturbed watersheds where the input of contaminants is dominated by atmospheric fallout …" and is less useful "… in high-sedimentation-rate lakes with developed watersheds where the input of contaminants is dominated by fluvial loading from one or more streams …" (USGS, 2004). As such, the 210Pb method would be expected to be even more adversely affected by the depositional environment than that for the 137Cs system and is significantly less suitable to the relatively high-energy depositional environment that comprises the subject study area. The $_{137}$Cs and $_{210}$Pb activity analytical results were reported with significant experimental error (e.g., Figure F-2 through Figure F-11, Subject Report). Linear regression was performed to find the slope of the line defined by those 210Pb data that were judged to be unsupported (Append F) versus their core depth to determine net sedimentation rates (Figure F-12 through Figure F-26). However, the regressions do not incorporate the variance of experimental error associated with each datum. Therefore, a range of slopes and, consequently, net sedimentation rates, exists at each core location. Only "mean" net sedimentation rates are reported, but not the significant deviation inherent in the analyses. The presence of a significant range of net sedimentation rates is highlighted by the regression method used, but which has not been quantified. The range of	

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		net sedimentation rates shall be quantified. Further, model sensitivity runs shall be completed for the full range of net sedimentation rates, and the results discussed in the report, as well as the rational for selecting the ranges of net sedimentation rates.	
95	Appendix F, p. 5	The report shall explain how the "effects of uncertainty due to selection of data to use in the log-linear regression were also accounted for in the analysis."	The Appendix F text was modified to clarify this statement.
96	Appendix I, Figure I-1	The flow shall be changed to log scale so it can be compared to WSE plot. Also, the shaded areas around the WSE plot line shall be defined. It is unclear what this shaded area is trying to represent.	The panels displaying flow rate on this figure were modified so as to use a log-scale for the y-axis. No shading was added to the WSE plot.
97	Appendix I, Figure I-22-7	The report shall provide information regarding where these data originated and additional text to describe the figure. The figure shows some dates, but it is not clear if the data between dates were daily values or interpolated – the report shall clarify this. The y-axis shall also be changed to a log scale	Time series of suspended sediment concentrations displayed on these figures were generated using the sediment rating curve discussed in Section 4.2.3. Clarifying text was added to Appendix I and the figures were modified as requested.

Table J-2
Additional Comments from USGS Received on June 6, 2012

USGS Comment Number	EPA Comment	Response/Approach for Addressing in Draft Final Report
1	Please provide depth, velocity, and width data from the low-flow sediment EWI. This data could be used to calculate a discharge that could be used to compare discharge (if any) at the low end of the rating.	Data from the EWI survey conducted on May 19, 2011 were included in Appendix D. Please see the response to Comment #24 regarding the utility of the EWI data for validation of the hydrodynamic model.
2	Discharge into Lake Houston was determined by using 6 USGS gauges upstream of the reservoir (from 1985 to 1996). However, based on the text, there isn't an explanation on how it was used for determining discharge at the dam. The assumption now is that discharge rate at the dam equalled the discharge rate into Lake Houston. Correct?	Text was added to Section 3.3.1 to explain how the USGS flow rate data collected upstream of Lake Houston were used to specify discharge at the dam. It was assumed that the discharge rate at the dam was equal to the discharge rate into Lake Houston.
3	Does the model provide estimated discharge on a daily basis? If so, please provide the the daily value for the following dates: 10/18/2006 06/11/2001 04/27/1995 03/13/1995 01/31/1995 01/20/1995 11/03/1994 10/24/1994 10/21/1994 10/19/1994 06/24/1994 05/19/1994	Comparisons of predicted and measured flow rate at the USGS gauge at the US90 Bridge were included in Section 3.4.